

Andrew J. Lail

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EDUCATION

Master of Science in Pharmaceutical Sciences (under Dr. Jason Kwan)

Graduated April 2023

University of Wisconsin-Madison, Madison, WI, USA

Bachelor of Science in Biochemistry, Minor in Biology (Research Option)

Graduated May 2019

Georgia Institute of Technology, Atlanta, GA, USA

RESEARCH EXPERIENCE

School of Pharmacy, University of Wisconsin-Madison

August 2020-April 2023

Graduate Researcher – Mentor: Dr. Jason Kwan

Investigated natural product producing microbes using culture-based and bioinformatic methods

Optimized a novel RNA extraction protocol for an environmental microbe

Wrote and defended a research thesis

Contributed bug fixes and features to the lab's bioinformatics pipeline

Institute of Agriculture, University of Tennessee

May 2019-June 2020

Research Technician III - Principal Investigator: Dr. Neal Stewart

Automated manual protocols using a high throughput liquid handling robot

Assembled genetic constructs for chloroplast engineering

Contributed to bacteria-to-roots signaling project

School of Chemistry and Biochemistry, Georgia Institute of Technology

August 2017-May 2019

Undergraduate Researcher - Mentor: Dr. Vinayak Agarwal

Investigated specificity of carrier proteins and halogenases in halogenated pyrrole natural product biosynthesis

PUBLICATIONS

Rees, E.; Uppal, S.; Clark, C.; **Lail, A. J.**; Waterworth, S.; Roesemann, S.; Wolf, K.; Kwan, J. Autometa 2: A versatile tool for recovering genomes from highly-complex metagenomic communities. Submitted September 6, 2023.

Occhialini, A.; Pfotenbauer, A. C.; Li, L.; Harbison, S. A.; **Lail, A. J.**; Burris, J. N.; Piasecki, C.; Piatek, A. A.; Daniell, H.; Stewart Jr, C. N.; Lenaghan, S. C. Mini-Synplastomes for Plastid Genetic Engineering. *Plant Biotechnology Journal* (2022), 20 (2), 360–373. Doi: 10.1111/pbi.13717.

Occhialini, A., Pfotenbauer, A.C., Frazier, T.P., Li, L., Harbison, S. A., **Lail, A. J.**, Mebane, Z., Piatek, A. A., Rigoulot, S. B., Daniell, H., Stewart, C. N., Lenaghan, S. C. Generation, analysis, and transformation of macro-chloroplast Potato (*Solanum tuberosum*) lines for chloroplast biotechnology. *Sci Rep* 10, 21144 (2020). Doi: 10.1038/s41598-020-78237-x

Thapa, H. R., **Lail, A. J.**, Garg, N., Agarwal, V. Chemoenzymatic synthesis of starting materials and characterization of halogenases requiring acyl carrier protein tethered substrates. *Methods in Enzymology* (2018) 604, 333-366. Doi: 10.1016/bs.mie.2018.01.028

LEADERSHIP/VOLUNTEERING

Undergraduate Research Mentor 2022-2023

Mentored two undergraduate students in the lab, planning experiments and assisting them as they grew towards independence

Attended Research Mentor Delta Program course to improve my mentorship skills

American Association of Pharmaceutical Scientists (UW-Madison chapter) Fall 2021-Spring 2022

Professional Development Co-chair

Organized and hosted career roundtable lunch with local scientist from Promega

Vaccine Clinic Volunteer (with School of Pharmacy) May 2021

Helped direct queue and clean up at a Covid-19 vaccination event in South Madison

Peer Mentor for Incoming Student (School of Chemistry and Biochemistry) Fall 2018

Provided resources and support for a first-year student transitioning to college

AWARDS AND HONORS

Wisconsin Distinguished Graduate Fellowship 2020-21 academic year

Pharmaceutical Sciences Graduate Scholar Fall 2020

President's Undergraduate Research Award Fall 2018

Zell Miller Scholarship Fall 2015- Spring 2019

TECHNICAL SKILLS

Genetic Techniques

Transformation

PCR

DNA Gel Electrophoresis

Mini/MidiPrep

Golden Gate cloning

Plant genotyping

Southern Blot

DNA Extraction

RNA Extraction

RNA Sequencing

Protein Purification

Protein Expression in *E. coli*

FPLC

Affinity Chromatography

Ion Exchange Chromatography

Gel Filtration Chromatography

SDS-PAGE

Analysis

LC-MS

MALDI-TOF MS

Protein Mass Spec

Fluorescence microscopy

Software

SnapGene

Word and Excel

ChemDraw

Cytoscape

Bash

Python

R

Slurm

Pandas

Conda